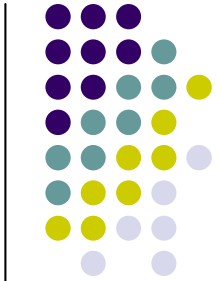
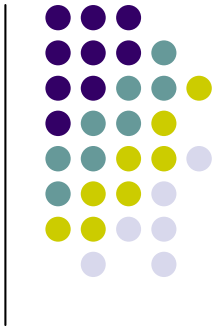
IRC 2009



Chapter 6

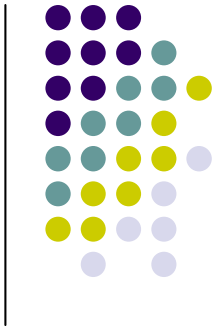
Wall Construction

Wood Wall Framing
R602.10 M



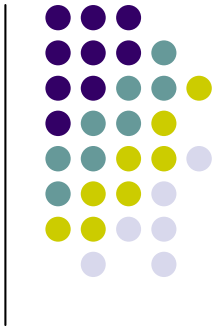
- Table R602.3(1), M, reorganized
  - Diameter and length of each nail shown
  - Each connection has an item #
  - Eliminates fastening between ceiling joists and rafter ties >>> Table R802.5.1
  - Updated sheathing fasteners

Wood Wall Bracing
R602.10 M



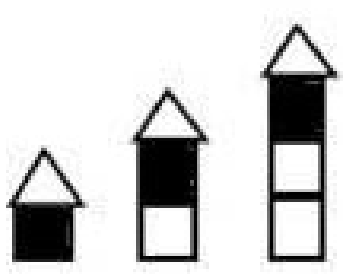
- Refined definitions
  - Braced wall lines
    - Exterior=Interior
    - Designated
  - Braced wall panels
- Separate wind and seismic requirements – two tables
- Path of compliance clearly stated
  - Prescriptive
    - Intermittent
    - Continuous sheathing
    - Mixing
  - Engineered design

Braced Wall Panel Construction R602.10.1.1 M

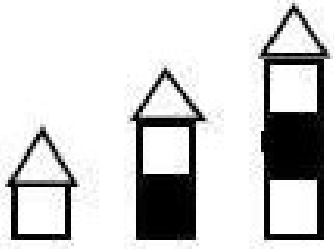


- Intermittent bracing methods, R 602.10.2
- Continuous sheathing methods,
  R 602.10.4 and R602.10.5
- Mixing methods
  - Story to story
  - Braced wall line to braced wall line
  - Within braced wall line

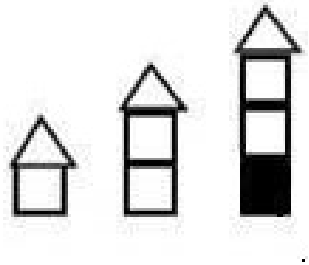
Length of Bracing R602.10.1.2 M

EXPOSURE CATEGORY B, 30 ft MEAN ROOF HEIGHT, 10 ft EAVE TO RIDGE HEIGHT, 10 ft WALL HEIGHT, 2 BRACED WALL LINES			MINIMUM TOTAL LENGTH (feet) OF BRACED WALL PANELS REQUIRED FOR EACH BRACED WALL LINE			
Basic Wind Speed (mph)	Story Location	Braced Wall Line Spacing (feet)	Method LIB Notes f, h	Method GB (double sided) Note g	Methods DWB, WSP, SFB, PCP, HPS Notes f, i	Continuous Sheathing
= 90 (mph)		10	3.50	3.5	2.0	2.0
		20	7.0	7.0	4.0	3.5
		30	9.5	9.5	5.5	5.0
		40	12.5	12.5	7.5	6.0
		50	15.5	15.5	9.0	7.5
		60	18.5	18.5	10.5	9.0

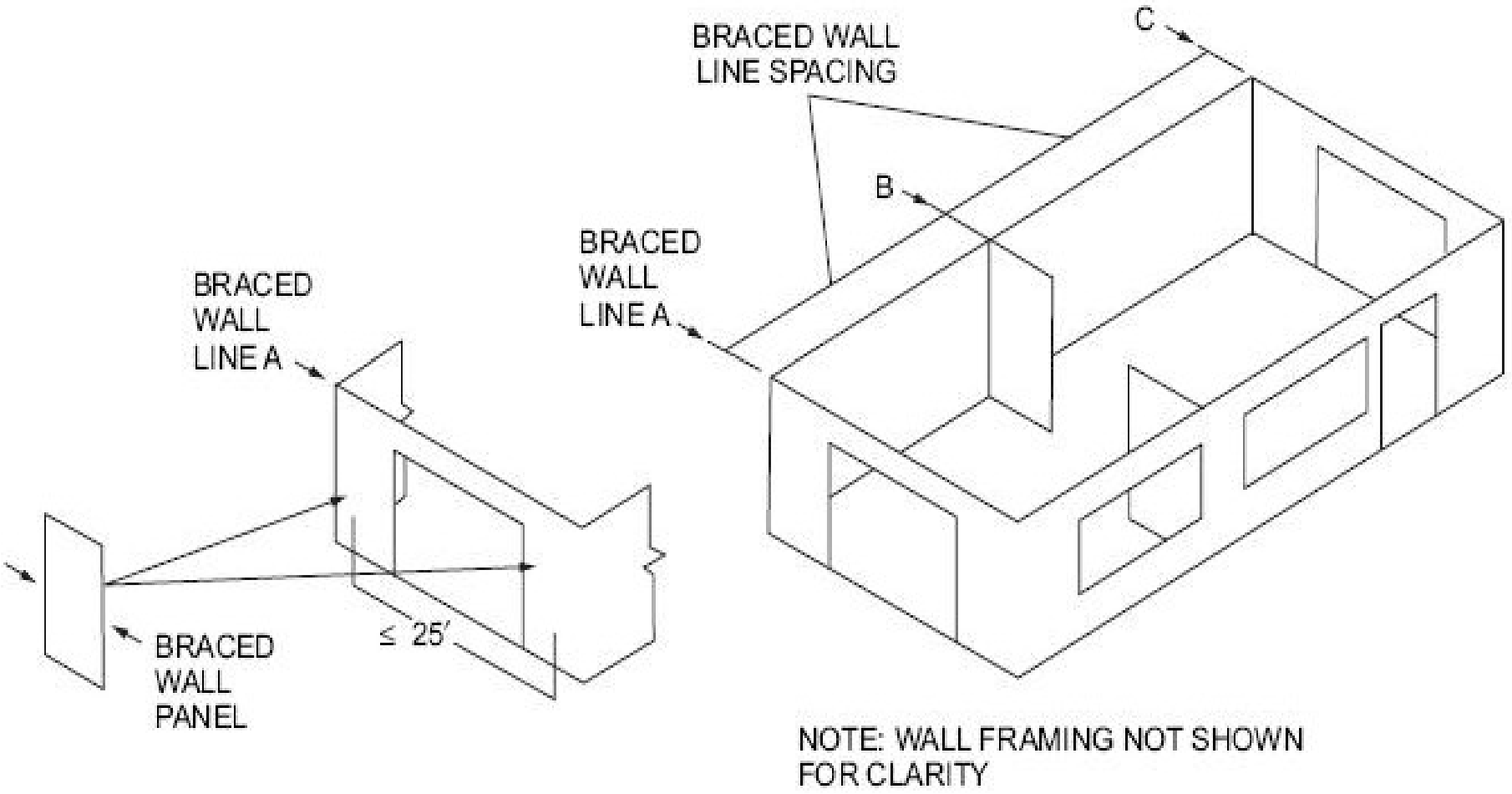
Braced Wall Lines
R602.10.1.2 M

EXPOSURE CATEGORY B, 30 ft MEAN ROOF HEIGHT, 10 ft EAVE TO RIDGE HEIGHT, 10 ft WALL HEIGHT, 2 BRACED WALL LINES			MINIMUM TOTAL LENGTH (feet) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE			
Basic Wind Speed (mph)	**Story Location**	**Braced Wall Line Spacing (feet)**	**Method LIB** Notes f, h	**Method GB (double sided)** Note g	**Methods DWB, WSP, SFB, PCP, HPS** Notes f, i	**Continuous Sheathing**
= 90 (mph)		10	7.0	7.0	4.0	3.5
		20	13.0	13.0	7.5	6.5
		30	18.5	18.5	10.5	9.0
		40	24.0	24.0	14.0	12.0
		50	29.5	29.5	17.0	14.5
		60	35.0	35.0	20.0	17.0

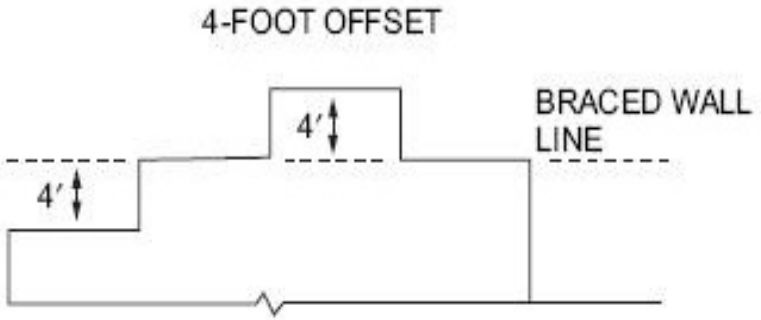
Braced Wall Lines
R602.10.1.2 M

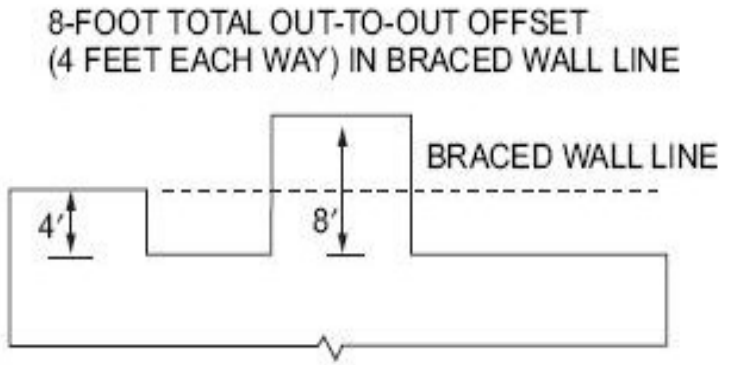
EXPOSURE CATEGORY B, 30 ft MEAN ROOF HEIGHT, 10 ft EAVE TO RIDGE HEIGHT, 10 ft WALL HEIGHT, 2 BRACED WALL LINES			MINIMUM TOTAL LENGTH (feet) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE			
Basic Wind Speed (mph)	**Story Location**	**Braced Wall Line Spacing (feet)**	**Method LIB** **Notes f, h**	**Method GB (double sided)** **Note g**	**Methods DWB, WSP, SFB, PCP, HPS** **Notes f, i**	**Continuous Sheathing**
= 90 (mph)		10	NP	10.5	6.0	5.0
		20	NP	19.0	11.0	9.5
		30	NP	27.5	15.5	13.5
		40	NP	35.5	20.5	17.5
		50	NP	44.0	25.0	21.5
		60	NP	52.0	30.0	25.5

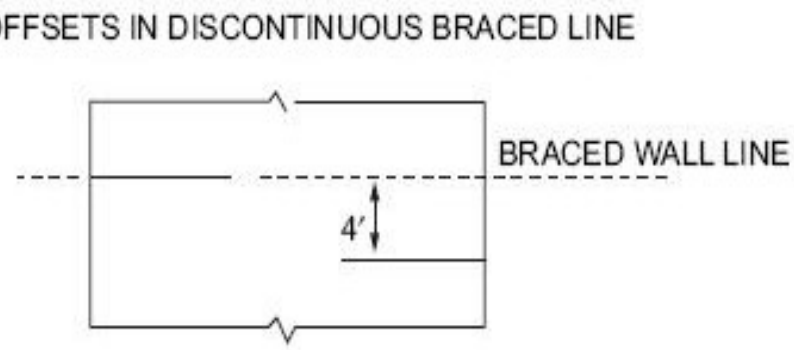
Braced Wall Panel Locations
R602.10.1.4 M



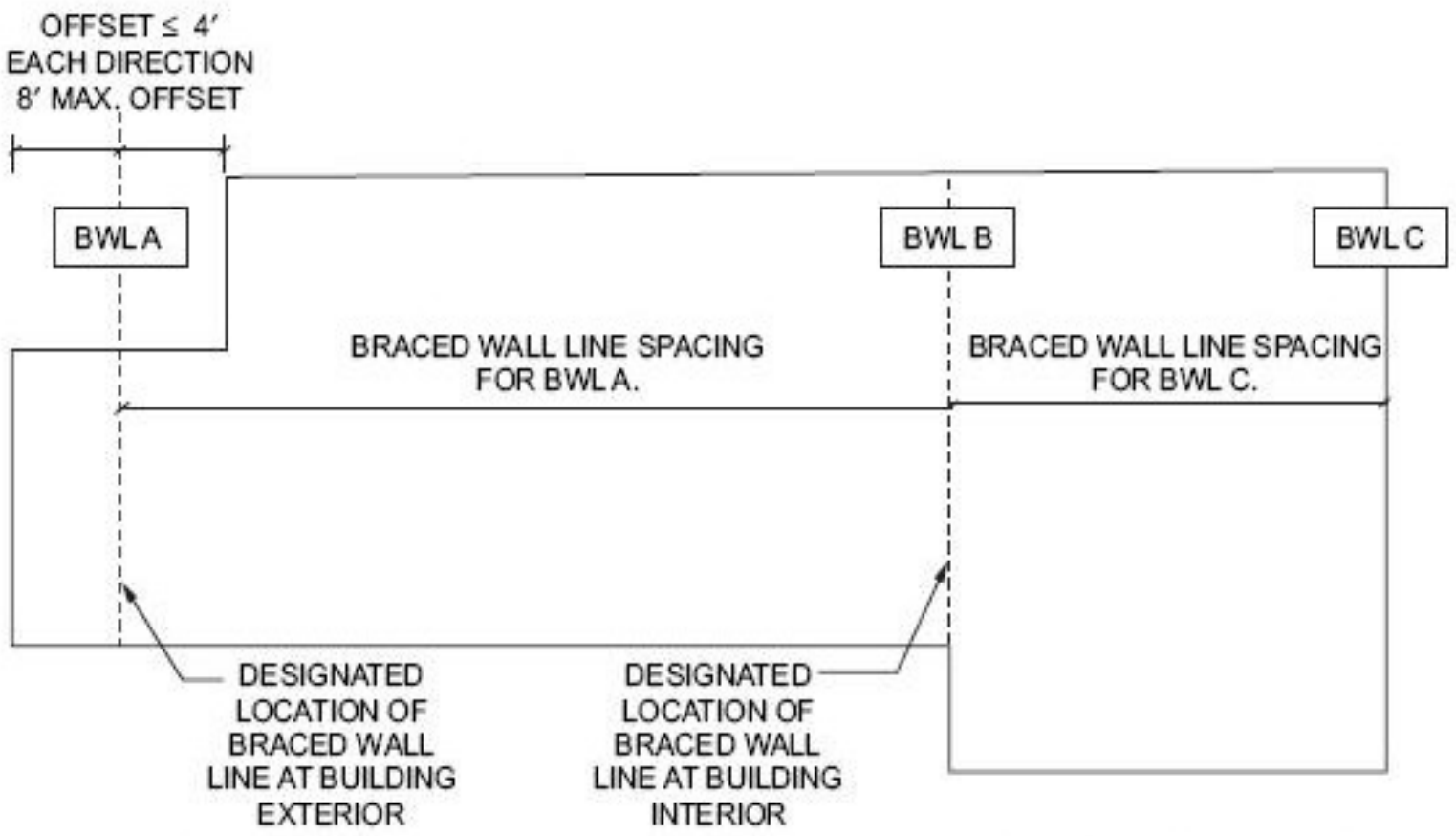
Braced Wall Panel Locations R602.10.1.4 M





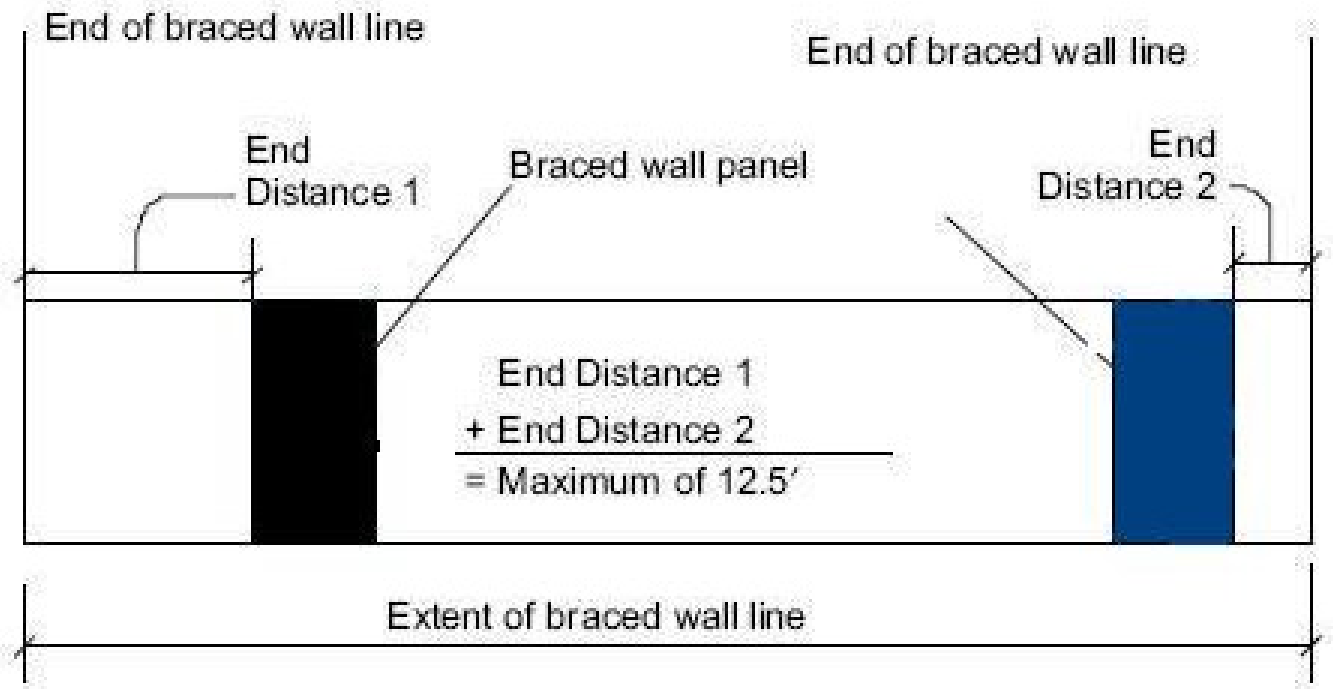


Braced Wall Panel Locations R602.10.1.4 M

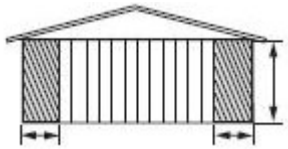
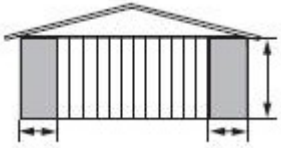


NOTE: BRACED WALL SPACING FOR BWL B IS THE GREATER OF THE DISTANCE FROM BWL A TO BWL B OR FROM BWL B TO BWL C.

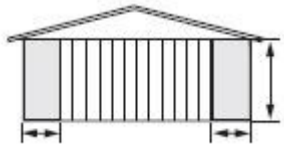
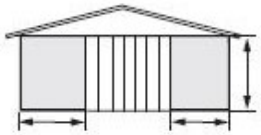
Braced Wall Panel Locations R602.10.1.4 M



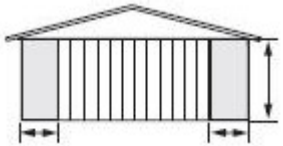
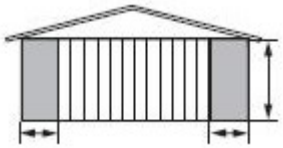
Intermittent BWP Construction Methods R602.10.2 M

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
LIB	Let-in-bracing	1 × 4 wood or approved metal straps at 45° to 60° angles for maximum 16" stud spacing		Wood: 2-8d nails per stud including top and bottom plate metal: per manufacturer
DWB	Diagonal wood boards	3/4" (1" nominal) for maximum 24" stud spacing		2-8d (21/2" × 0.113") nails or 2 staples, 13/4" per stud
WSP	Wood structural panel(see section R604)	3/8"		For exterior sheathing see Table R602.3(3) For interior sheathing see Table R602.3(1)

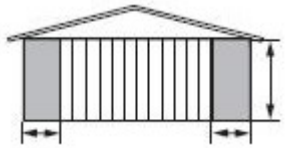
Intermittent BWP Construction Methods R602.10.2 M

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
SFB	Structural fiberboard sheathing	1/2" or 25/32" for maximum 16" stud spacing		11/2" galvanized roofing nails or 8d common (21/2" × 0.131) nails at 3" spacing (panel edges) at 6" spacing (intermediate supports)
GB	Gypsum Board	1/2"		Nails or screws at 7" spacing at panel edges including top and bottom plates; for all braced wall panel locations for exterior sheathing nail or screw size, see Table R602.3(1); for interior gypsum board nail or screw size, see Table R702.3.5

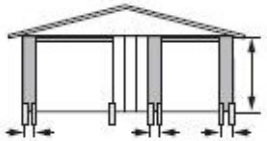
Intermittent BWP Construction Methods R602.10.2 M

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
PBS	Particle Board Sheathing (see Section R605)	3/8" or 1/2" for maximum 16" stud spacing		11/2 " galvanized roofing nails or 8d common (21/2 " × 0.131) nails at 3" spacing (panel edges) at 6 spacing (intermediate supports)
PCP	Portland Cement Plaster	See Section R703.6 For maximum 16" stud spacing		11/2", 11 gage, 7/16" head nails at 6" spacing or 7/8", 16 gage staples at 6" spacing

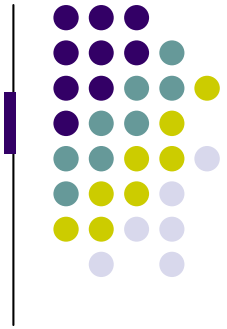
Intermittent BWP Construction Methods R602.10.2 M

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
HPS	Hardboard Panel Siding	7/16" For maximum 16" stud spacing		0.092" dia., 0.225" head nails with length to accommodate 11/2" penetration into studs at 4" spacing (panel edges), at 8" spacing (intermediate supports)
ABW	Alternate braced wall panel	See section R602.10.3.2		See Section R602.10.3.2

Intermittent BWP Construction Methods R602.10.2 M

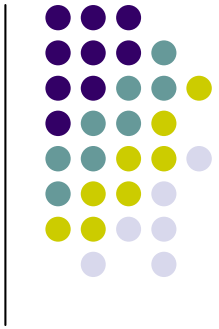
METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
PFH	Intermittent portal frame	See section R602.10.3.3		See section R602.10.3.3
PFG	Intermittent portal frame at garage	See section R602.10.3.4		See section R602.10.3.4

Intermittent BWP Interior Finish Material R602.10.2.1



- Braced wall panels must have ½” gypsum wall board installed on the side of the wall opposite to the bracing material
  - Exceptions:
    - Wall panels that are braced in accordance with Methods GB, ABW, PFG, and PFH
    - When an approved interior finish material has an in-plane shear resistance equivalent to gypsum board
    - For Methods DWB, WSP, SFB, PBS, PCP and HPS omitting gypsum wall board is permitted provided the length of bracing in Table R602.10.12(1) is multiplied by a factor of 1.5.

Minimum Length of BWP R602.10.3



- For Methods DWB, WSP, SFB, PBS, PCP and HPS
  - Usually 48 in., minimum 36 in.
  - Cover 3x16 in. or 2X24 in. stud spaces
  - Effective length = actual length of panel
- For Method GB
  - Minimum 96 in. applied on one face
  - Minimum 48 in. applied on both face

Minimum Length of BWP R602.10.3

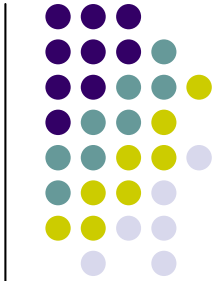
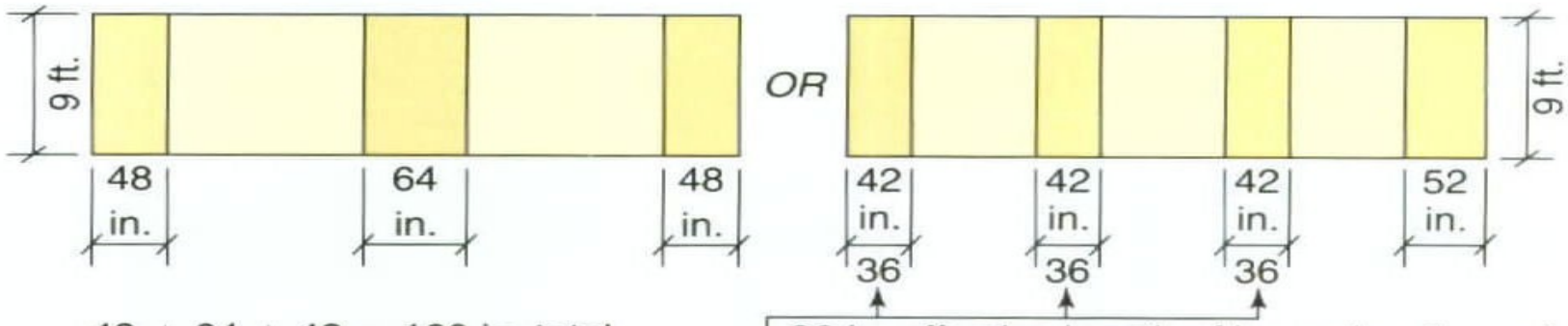
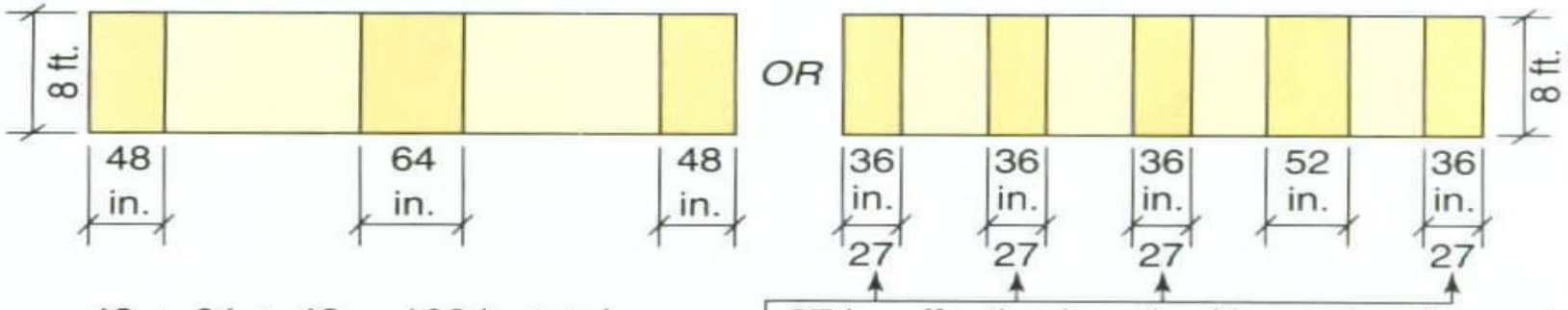


TABLE R602.10.3 EFFECTIVE LENGTHS FOR BRACED WALL PANELS LESS THAN 48 in. IN ACTUAL LENGTH (BRACE METHODS DWB, WSP, SFB, PBS, PCP AND HPS)			
ACTUAL LENGTH OF BRACED WALL PANEL (in.)	EFFECTIVE LENGTH OF BRACED WALL PANEL (in.)		
	8-foot Wall Height	9-foot Wall Height	10-foot Wall Height
48	48	48	48
42	36	36	N/A
36	27	N/A	N/A



48 + 64 + 48 = 160 in. total bracing length

36 in. effective length of braced wall panel
36 + 36 + 36 + 52 = 160 in. total effective bracing length



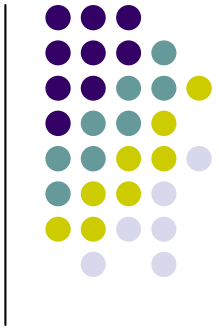
48 + 64 + 48 = 160 in. total bracing length

27 in. effective length of braced wall panel
27 + 27 + 27 + 52 + 27 = 160 in. total effective length of bracing

Bracing methods
DWB, WSP, SFB, PBS, PCP, HPS

Equivalent effective bracing lengths using partial credit for braced wall panels 42 in. and 36 in. in length

Alternate Braced Wall Panels Methods



- To replace 48” of intermittent braced wall panel
  - ABW●, Alternate braced wall panels, Table R602.10.3.2
    - Complicated provision
  - PFH●, Portal frame with hold-downs
    - Typically used at large OH garage door openings
  - PFG●, at garage door openings

Adjustment of Length of BWPs R602.10.3.1

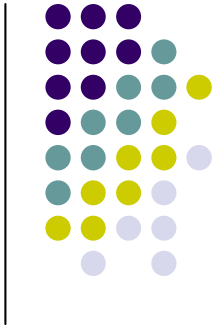


TABLE R602.10.3.1

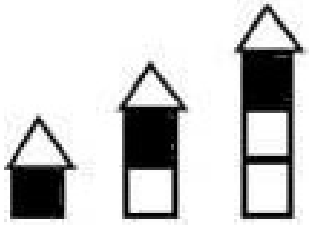
MINIMUM LENGTH REQUIREMENTS FOR BRACED WALL PANELS

SEISMIC DESIGN CATEGORY AND WIND SPEED	BRACING METHOD	HEIGHT OF BRACED WALL PANEL				
		8 ft	9 ft	10 ft	11 ft	12 ft
SDC A, B, C, D0, D1 and D2 Wind speed < 110 mph	DWB, WSP, SFB, PBS, PCP, HPS and Method GB when double sided	4' - 0"	4' - 0"	4' - 0"	4' - 5"	4' - 10"
	Method GB, single sided	8' - 0"	8' - 0"	8' - 0"	8' - 10"	9' - 8"

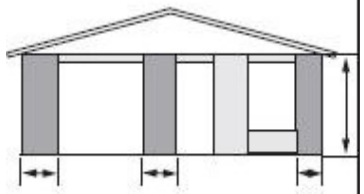
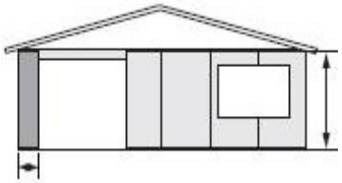
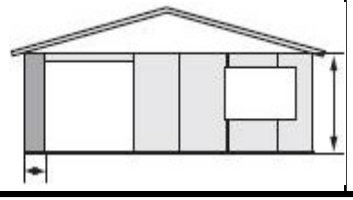
Continuous Sheathing R602.10.4

- ALL braced wall lines along exterior walls on the same story
  - Exception: other braced wall on the same story level or on any braced wall line on different story levels of the building
- Construction Methods, Table 602.10.4.1
- No mixing within braced wall line

Length of Bracing R602.10.1.2 M

EXPOSURE CATEGORY B, 30 ft MEAN ROOF HEIGHT, 10 ft EAVE TO RIDGE HEIGHT, 10 ft WALL HEIGHT, 2 BRACED WALL LINES			MINIMUM TOTAL LENGTH (feet) OF BRACED WALL PANELS REQUIRED FOR EACH BRACED WALL LINE			
Basic Wind Speed (mph)	Story Location	Braced Wall Line Spacing (feet)	Method LIB Notes f, h	Method GB (double sided) Note g	Methods DWB, WSP, SFB, PCP, HPS Notes f, i	Continuous Sheathing
= 90 (mph)		10	3.50	3.5	2.0	2.0
		20	7.0	7.0	4.0	3.5
		30	9.5	9.5	5.5	5.0
		40	12.5	12.5	7.5	6.0
		50	15.5	15.5	9.0	7.5
		60	18.5	18.5	10.5	9.0

Continuous Sheathing Methods R602.10.4.1

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
CS-WSP	Wood structural panel	3/8"		6d common (2" x 0.113") nails at 6" spacing (panel edges) and at 12" spacing (intermediate supports) or 16 ga. X 13/4 staples at 3" spacing (panel edges) and 6" spacing (intermediate supports)
CS-G	Wood structural panel adjacent to garage openings and supporting roof load only	3/8"		See Method CS-WSP
CS-PF	Continuous portal frame	As connection criteria		See Section R602.10.4.1.1

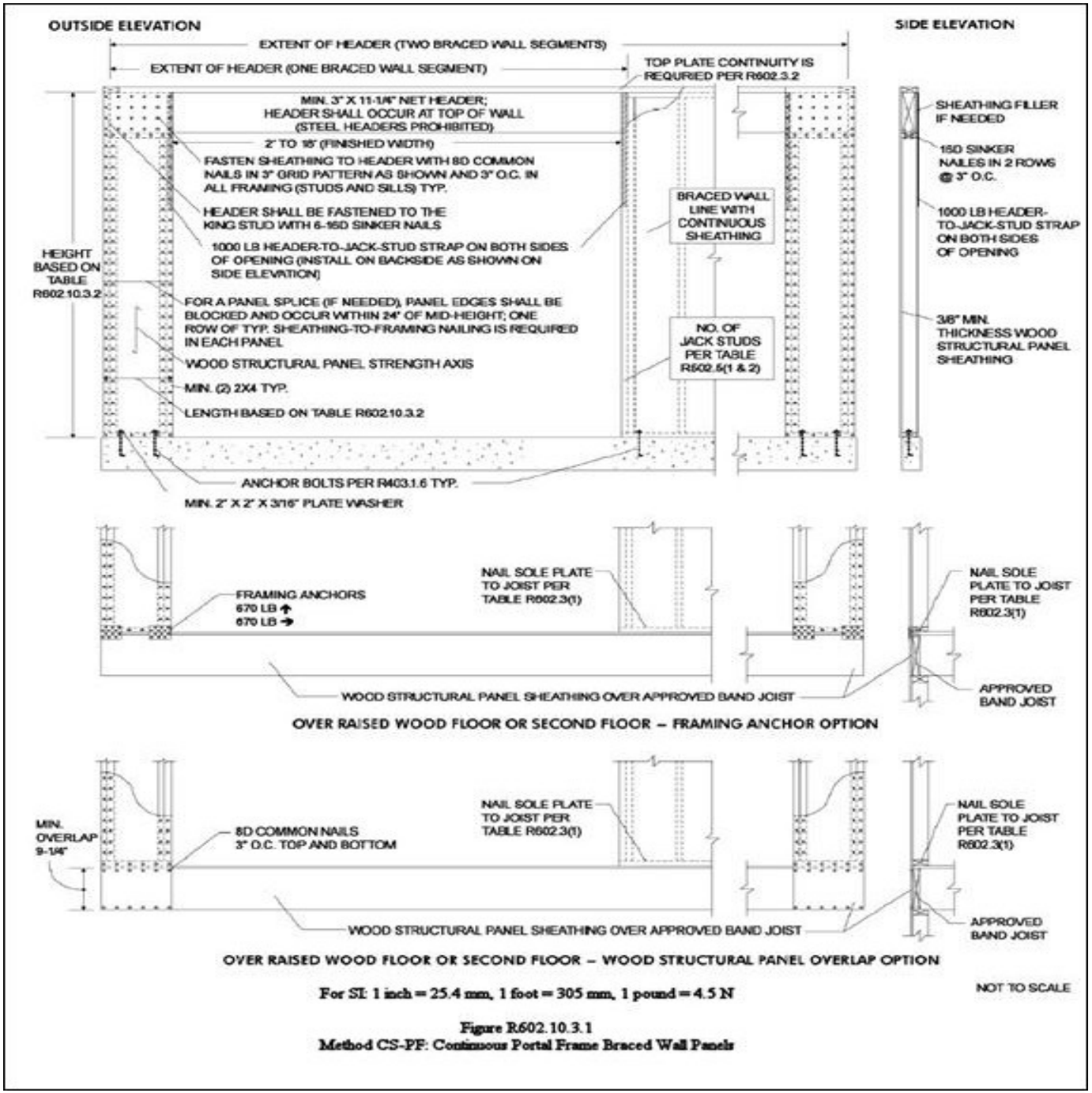
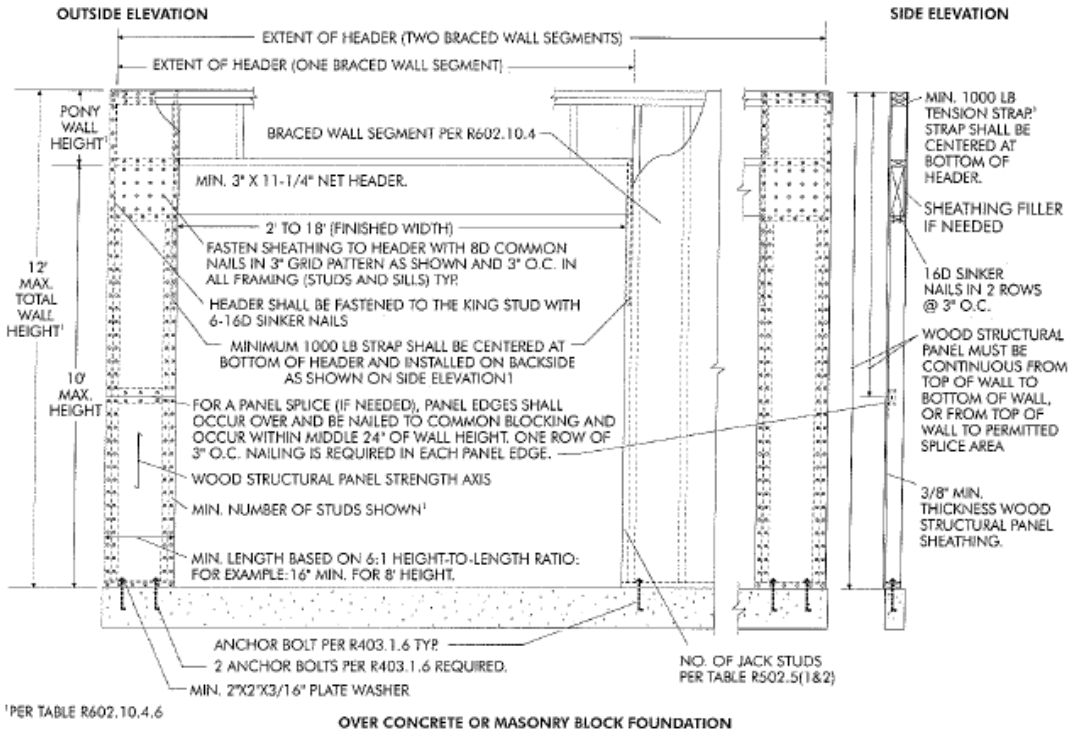


Figure R602.10.3.1
Method CS-PF: Continuous Portal Frame Braced Wall Panels

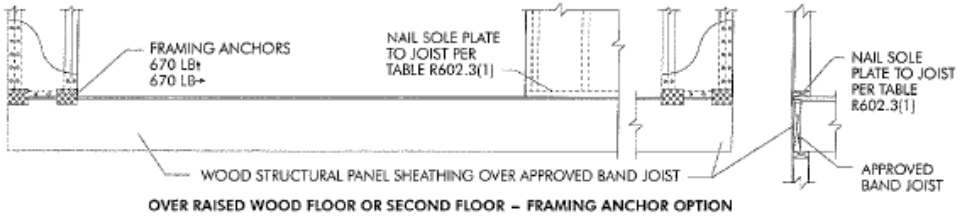
RB160

Replacement Figure

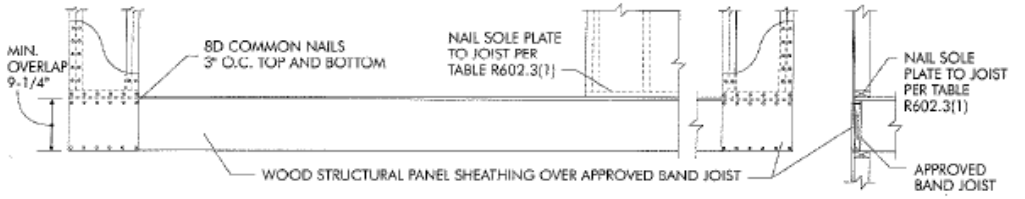


[1]PER TABLE R602.10.4.6

OVER CONCRETE OR MASONRY BLOCK FOUNDATION



OVER RAISED WOOD FLOOR OR SECOND FLOOR – FRAMING ANCHOR OPTION



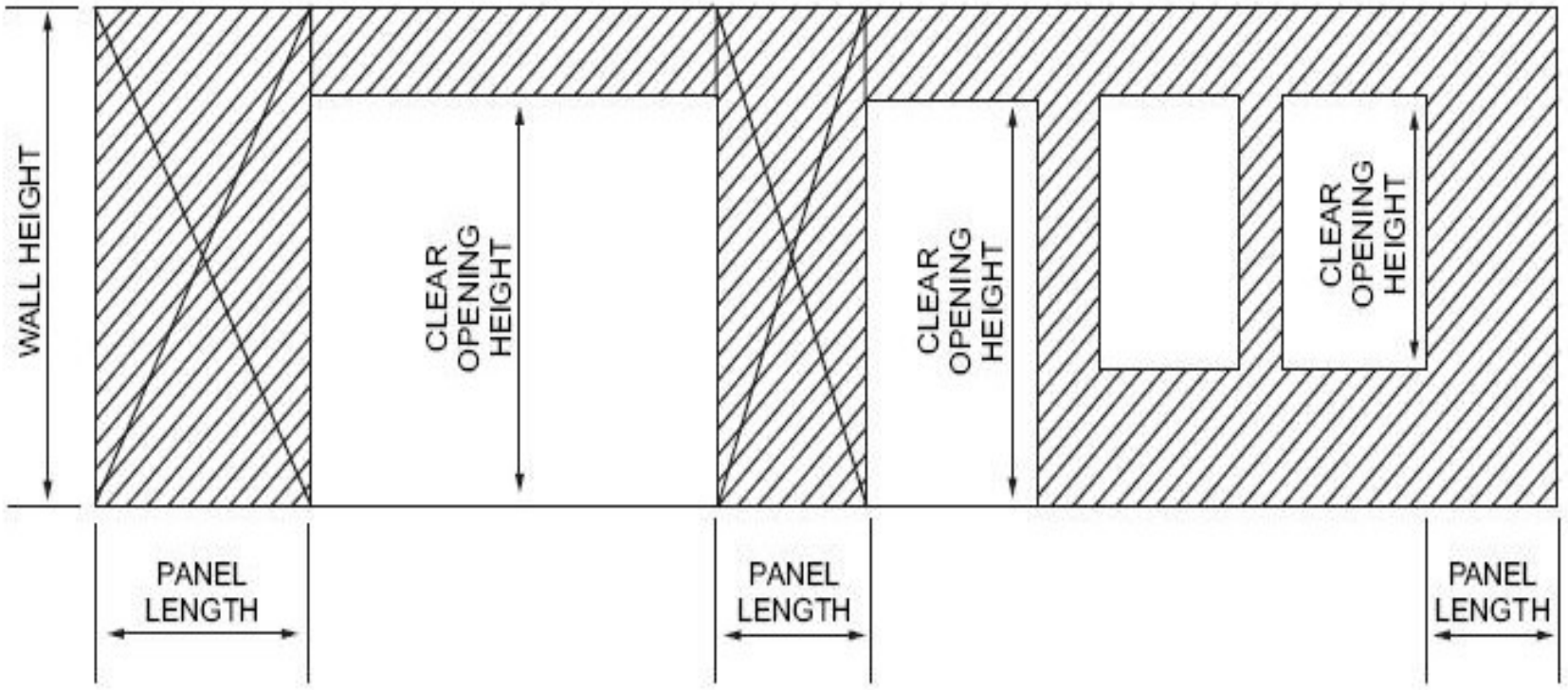
OVER RAISED WOOD FLOOR OR SECOND FLOOR – WOOD STRUCTURAL PANEL OVERLAP OPTION

NOT TO SCALE

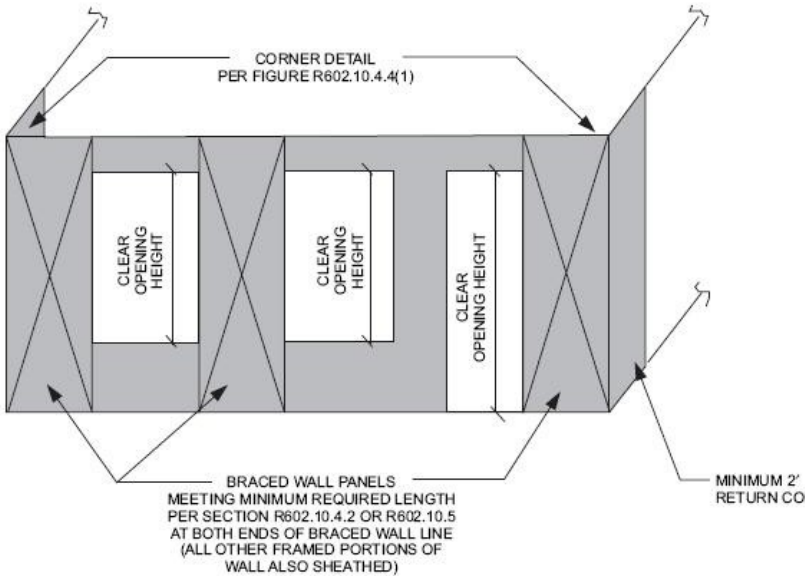
Length Requirements for BWPs with Continuous Sheathing Table R602.10.4.2 (in.)

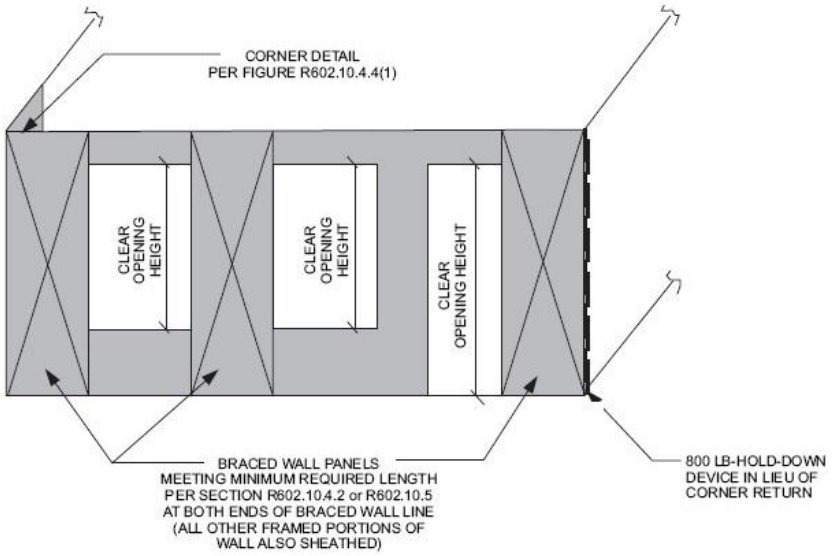
METHOD	ADJACENT CLEAR OPENING HEIGHT (in.)	WALL HEIGHT (feet)				
		8	9	10	11	12
CS-WSP	64	24	27	30	33	36
	100	-	48	45	-	-
More	Info	For	CS	WSP		
CS-G	=120	24	27	30	-	-
CS-PF	=120	16	18	20	-	-

Length Requirements for BWPs with Continuous Sheathing Figure R602.10.4.2

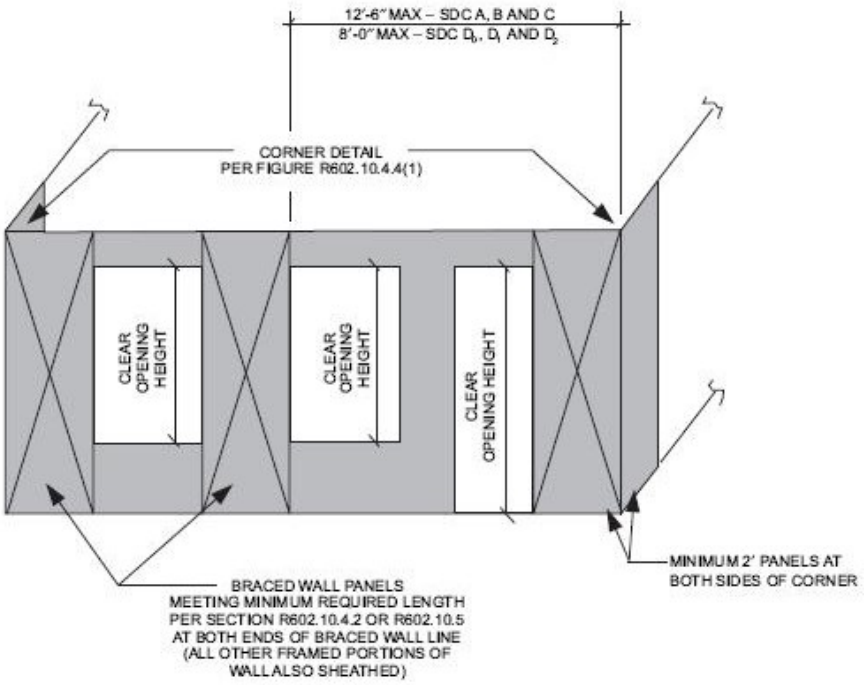


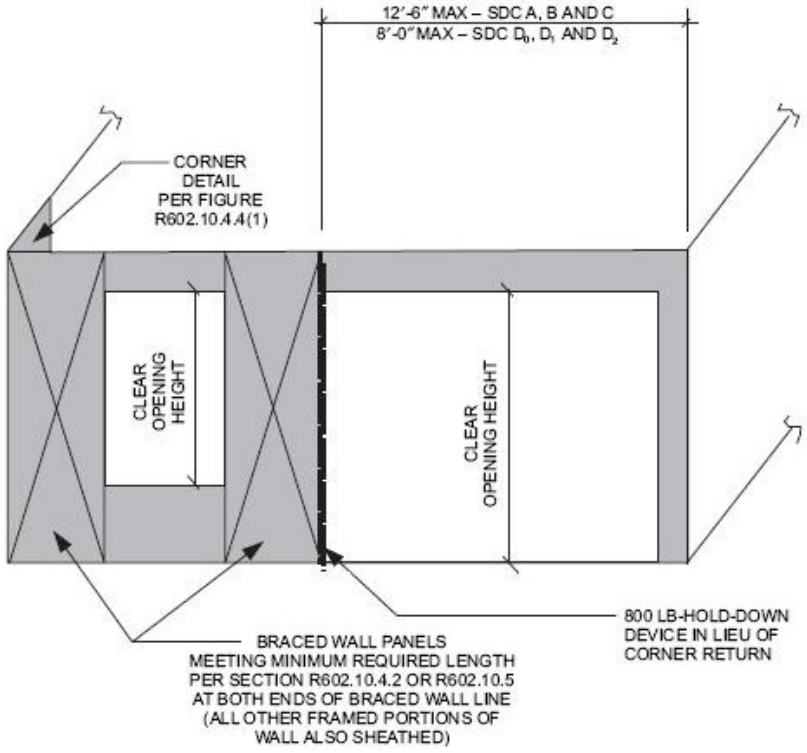
Braced Wall Panel Location R602.10.4.4



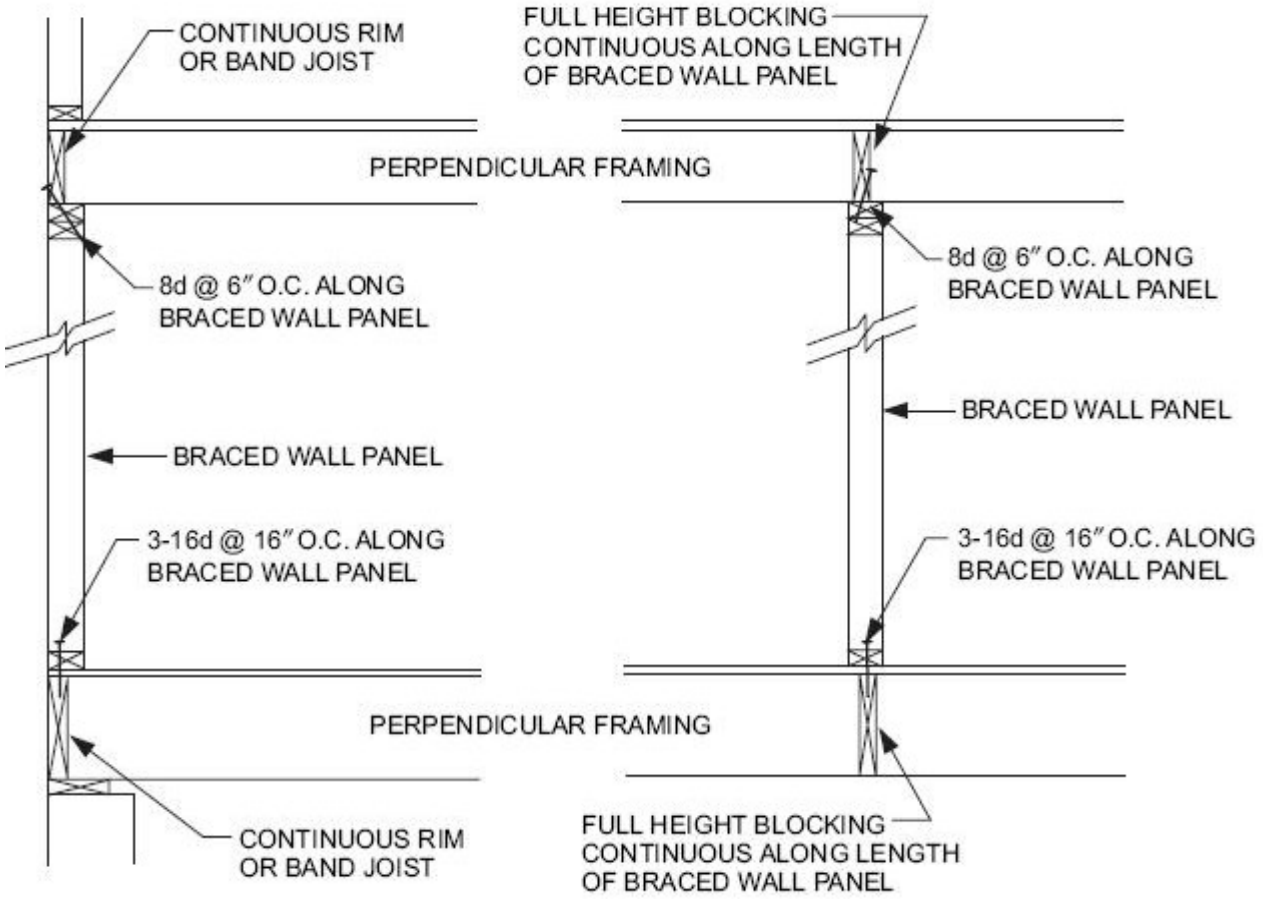


Braced Wall Panel Location R602.10.4.4

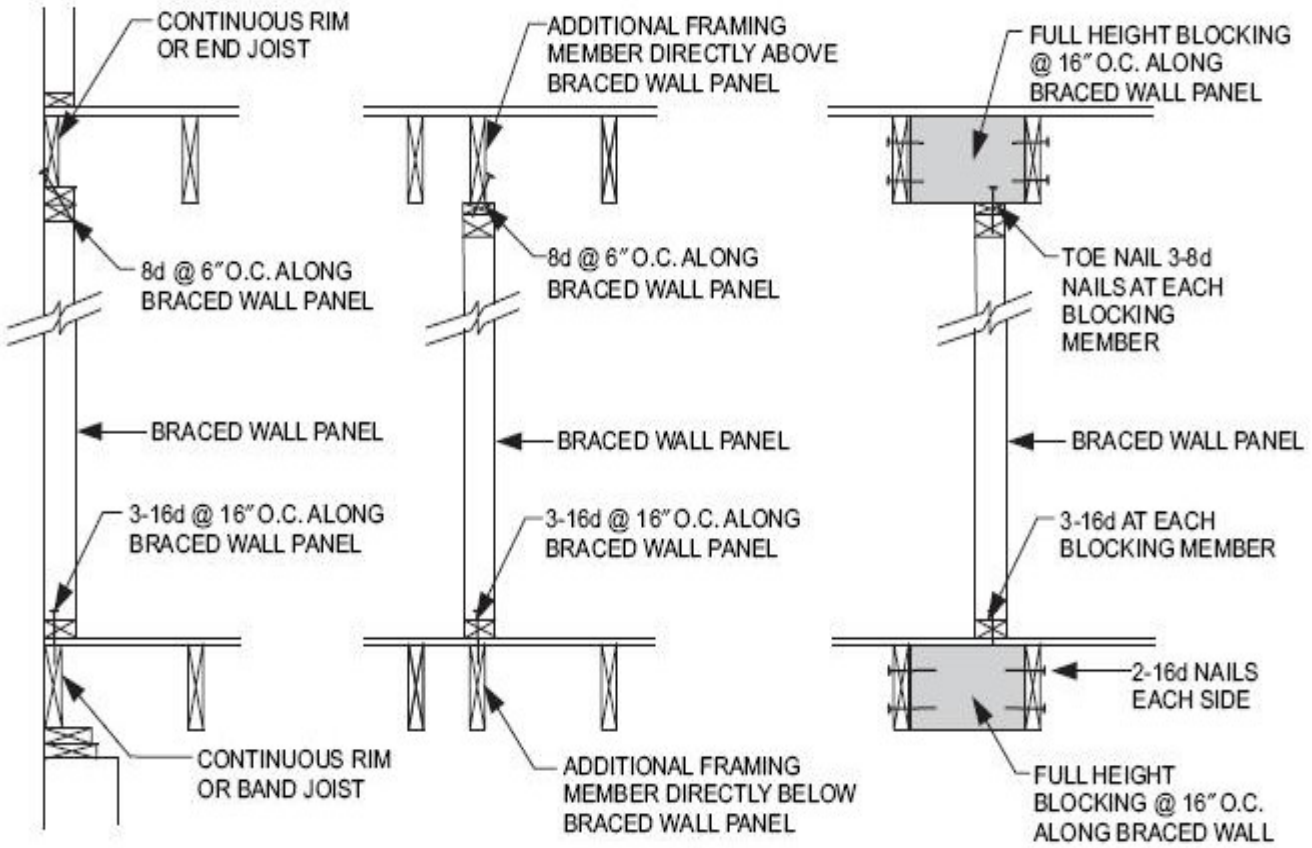




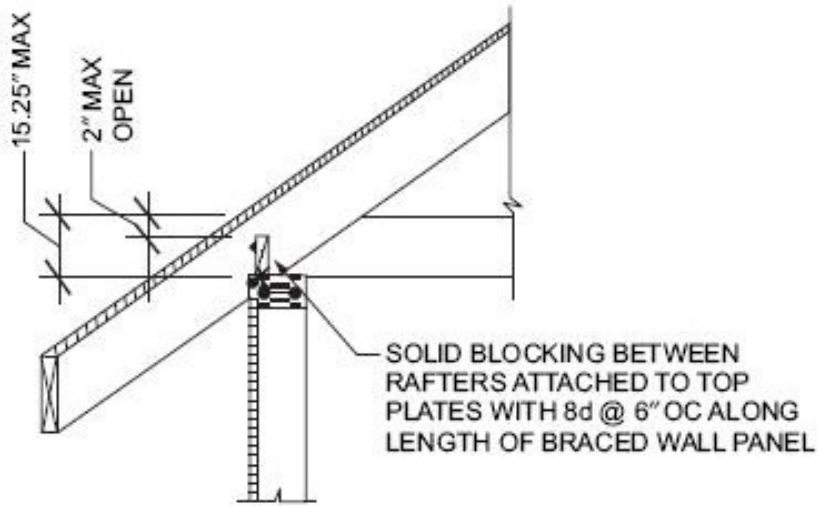
Braced Wall Panel Connections R602.10.6

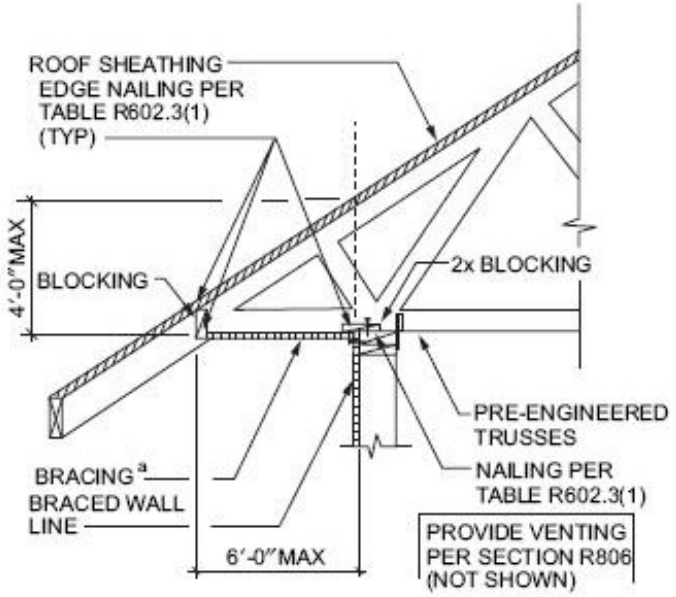


Braced Wall Panel Connections R602.10.6

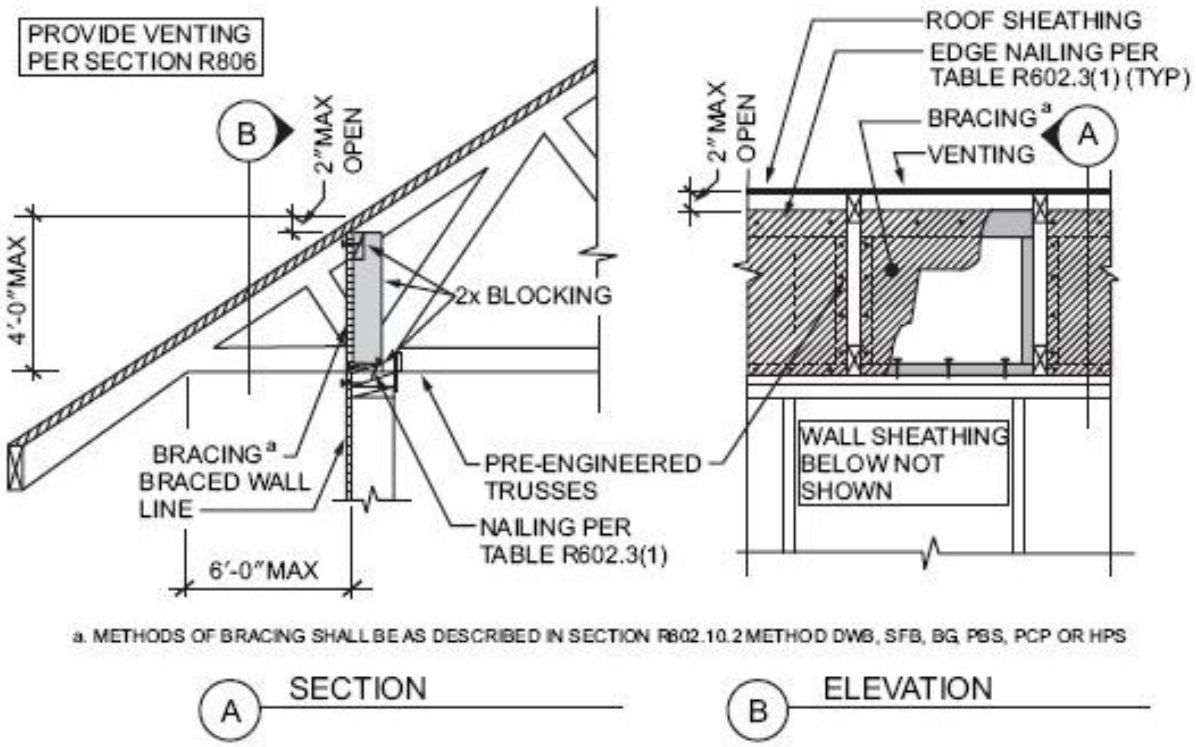


Connections to Roof Framing R602.10.6.2

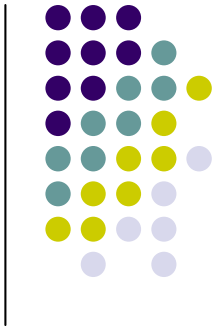




Connections to Roof Framing R602.10.6.2

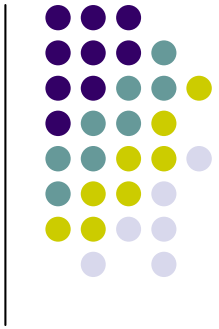


Window Sills
R612.2 M 139



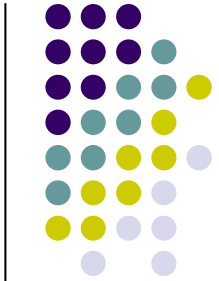
- Lowest part of the clear opening of an operable exterior window located 6 ft above grade or surface below shall be 18” above floor
- Alternatives
  - Fall prevention devices ASTM 2090
  - Opening limiting devices R612.4

Structural Insulated Panel (SIP) R613 A



- Adds prescriptive requirements for SIP
  - Max two story building
    - 40 ft x 60 ft
    - Maximum 10 ft high walls
    - Seismic Design Categories A, B, and C
    - Max design wind speed 130 mph in Exposure C
    - Max snow load 70 psf
- SIPs must bear a grade mark or certificate of inspection issued by an approved agency

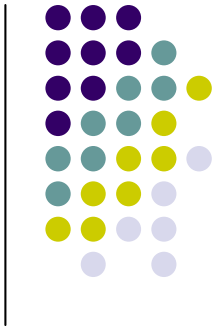
IRC 2009



Chapter 7

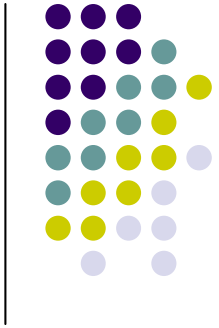
Wall Covering

Exterior Covering
R703 M



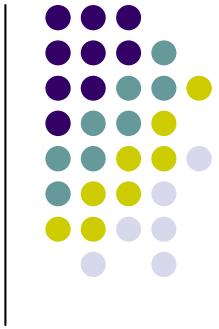
- Wall coverings, backing materials, and their attachments must be capable of resisting wind loads
- When installing wood, hardboard or wood structural panels, R703.3
  - Horizontal joints according to manufacturer's instructions or lapped min 1 in., ends caulked and flashing under the joint
- Changes to Table R703.4 clarify
  - Requirements for weather-resistive barrier
  - Updated fastening industry practices

Stone and Masonry Veneer R703.7 M



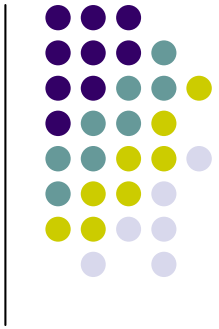
- Limited to one story above grade and 5 in. thickness
  - Exception, wood: 3 stories, 30 ft., 8 ft gable wall
- Installed in accordance with Table 703.4 and Figure R703.7
- Minimum embedment and cover dimensions for metal wall ties
- Changes to Table R703.4 clarify
  - Requirements for weather-resistive barrier
  - Updated fastening industry practices

Lintels
R703.7.3 M



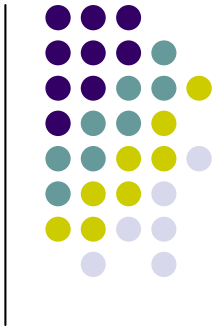
- Shop coat of rust-inhibited primer or other protection against corrosion
- Alternative prescriptive method for supporting veneer above openings
  - <18 ft 3 in.
  - Combination of steel angle and masonry with horizontal reinforcing

Vinyl Siding R703.11.1.1 A



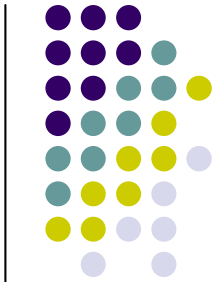
- Vinyl siding, soffit, and accessories must be installed in accordance with manufacturer's installation instructions
  - Vinyl soffit attached to suitable backing or nailing strips
- Foam plastic sheathing
  - Installed over WSP, fiberboard, GP use manufacturer's installation instructions, or
  - Install in accordance with R703.11.2.1

EIFS
R703.9 M



- Comply with ASTM E 2568
- Installed in accordance with manufacturer's instructions
- Terminate at least 6 in. above grade

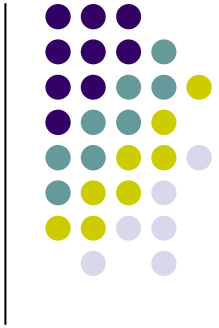
IRC 2009



Chapter 8

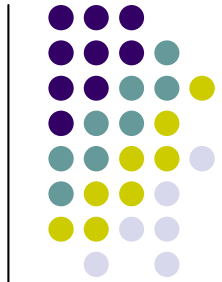
Roof Framing

Attics
R802, 807 M



- Ventilation, R802.6, M
  - Min opening dimension has been reduced from 1/8 to 1/16 inch
  - Provisions for unvented attic spaces rewritten for accuracy and clarification
    - Unvented attics are contained within building envelope
- Access for buildings with combustible ceiling or roof construction, R 807.1, M

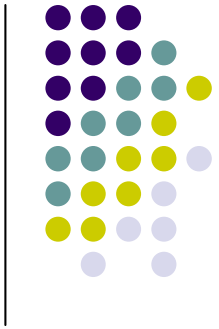
IRC 2009



Chapter 9

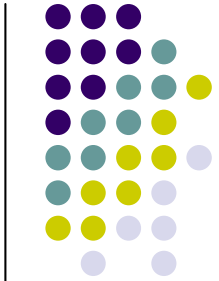
Roof Covering

Asphalt Shingles
R905.2 M



- Clarify attachment and wind-resistance requirements
- New tables for based on design wind speed for sealed (ASTM D 7158) or unsealed (ASTM D 3161) shingles
- Modified valley lining provisions
- Min dimensions for step-flashings
- Editorial changes

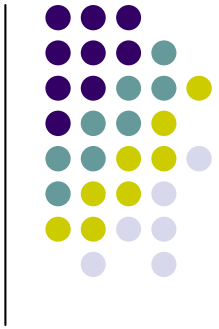
IRC 2009



Chapter 10

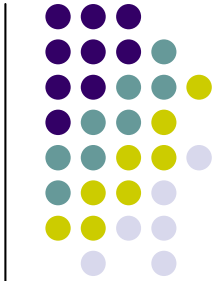
Roof Framing

Masonry Fireplaces and Chimneys R1001 and 1003, M



- Adds min thickness, parging, and lining requirements for smoke chamber
  - Applicable ASTM standards
- Revised definition of masonry chimney
- Clay flue liners require insoluble refractory mortar
  - ASTM C 1283 and
  - ASTM C 199
- Protection with parging of smoke chamber and flue liners withstand 1800°F

IRC 2009

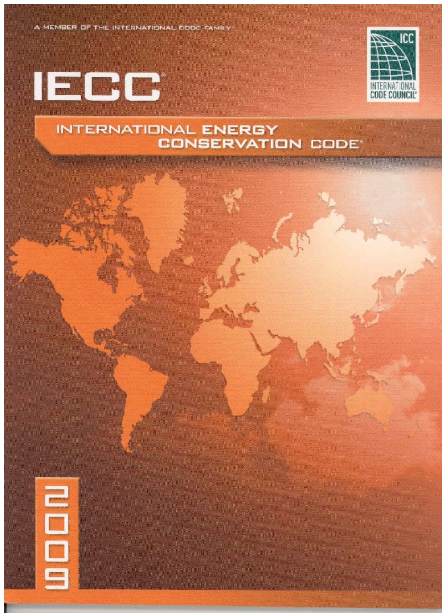


Chapter 11

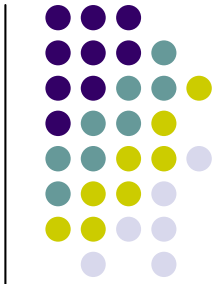
Energy Conservation

General
N1101.1 140, 141

- Differences between International Energy Conservation Code and IRC 2009
  - Delete Chapter 11
- For uniformity and consistency
  Compliance with (IECC) 2009



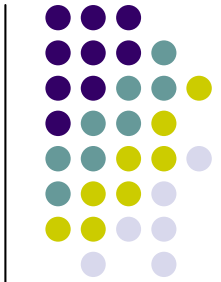
IRC 2009



Chapters 12 through 23

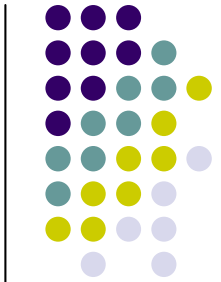
Mechanical

Appliances Access
M1305 142



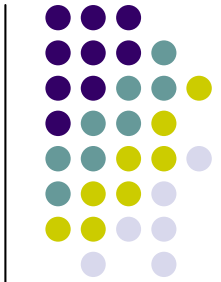
- Access to the attic opening shall be provided by a permanent or pull-down stairway in all new construction. In existing installations, portable ladders are be acceptable
- Consistent provisions with IFGC

Summary of Changes



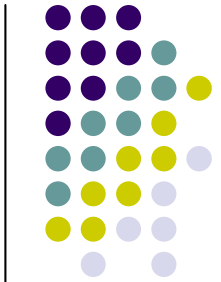
- Ground clearance for mechanical equipment and appliances, M1305.1.4.1and M1308.3, M
- Protect appliance from impact, M1307.1, M
- Makeup Air for Kitchen Exhaust Hoods, M1503.4, A
- Independent Garage HVAC System, M1601.6, A
- Prohibited Sources of Outdoor and Return Air for HVAC System, M1602.2 M

Summary of Changes



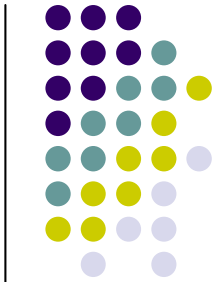
- Baseboard Convectors, M1405
  Radiant Heating Systems, M1406
  Duct Heaters, M1407
  - Replace IRC electrical section, Chapters 34 to 43, with NEC 2008, 143-145

Summary of Changes



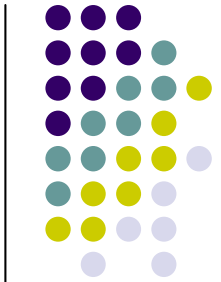
- Combustion air for solid and liquid fuel appliances, M1701, M
- Hydronic radiant floor heating system, M2103.2, A
- Hydronic Piping Materials, M2104, A

Clothes Dryer Exhaust M1502, M



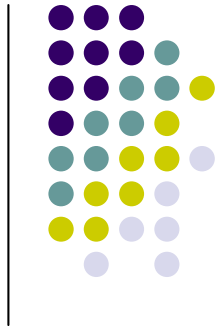
- Install in accordance with manufacturer's instructions
- Clarity re duct materials and installation
- New table with equivalent lengths for fittings
- Permanent marker for >25 ft concealed length must be provided
- Protection of duct against penetration by drywall fasteners

Other Changes, 146



- Deleted provisions for
  - Plumbing (P2501-P3303)
  - Electrical (E3301-E4304)

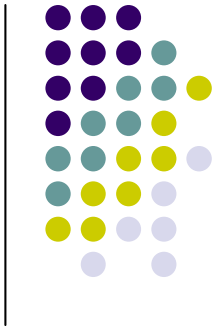
IRC 2009



Chapter 45

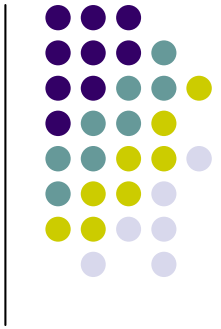
Site Work and Safeguards

Site Work and Safeguards Chapter 45 147



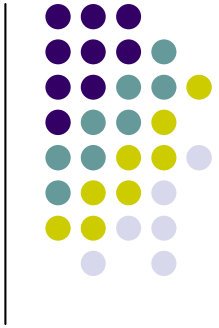
- Storage and placement, R4501
  - Construction equipment and materials shall be stored and placed so as not to endanger the public, the workers or adjoining property
- Utility connections, R4502
  - Service utility connections shall be discontinued and capped adequately

Site Work and Safeguards Chapter 45 147



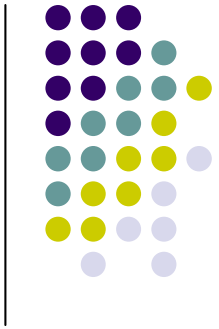
- Excavation and fill, R4503
  - Construction equipment and materials shall be stored and placed so as not to endanger the public, the workers or adjoining property
- Fill supporting foundations, R4504
  - Building permit required
  - Inspections in accordance with IBC

Site Work and Safeguards Chapter 45 147



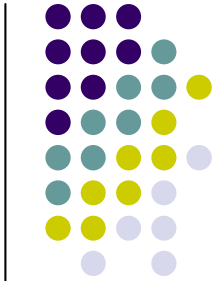
- Protection of Pedestrians, R4505.1
  - Barrier when the distance from the construction to the lot line is 5 (1524 mm) feet or less
- Protection of Pedestrians Adjacent to Excavations, R4505.2
  - Excavation on a site located 5 feet or less from the street lot line shall be enclosed with a barrier
  - Where located more than 5 feet from the street lot line, a barrier shall be erected when and where required by the building official

Site Work and Safeguards Chapter 45 147



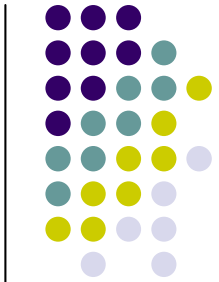
- Barriers, R4505.3
  - Barriers shall be at least 42 in. high, have adequate strength, and shall be of a type which will warn of potential danger
- Protection of Adjoining Property, R4506
  - Protect footings, foundations, party walls, chimneys, skylights and roofs

Adopted Appendices



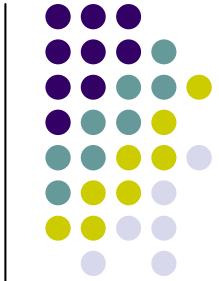
- C, Exit Terminals of Mechanical Draft and Direct-Vent Venting Systems, 148
- E, Manufactured Housing Used as Dwellings, 149
- F, Radon Control Methods, 150, entirety
- G, Swimming Pools, Spas, and Hot Tubs, 151
- K, Sound Transmission, 152, entirety

Comments



- Steve Thomas
  - 240-777-6216
  - Steve.Thomas@montgomerycountymd.gov
- George Muste
  - 240-777-6232
  - George.Muste@montgomerycountymd.gov

Agenda



- Welcome and Opening Remarks
  - Hadi Mansouri, Division Chief
- Significant Local Changes to IRC 2009
  - George Muste and Steve Thomas, Managers
  - Q & A
- IECC 2009 Code Provisions and Inspection Process
  - Mark Nauman, Plan Reviewer
  - Q & A
- Residential Zoning - Additions and New Construction
  - Susan Scala-Demby, Manager
  - Q & A